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10/700,185	11/03/2003	Robert Czachor	133639	3979

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EXAMINER	
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ART UNIT	PAPER NUMBER
4124	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/700,185	CZACHOR, ROBERT	
	Examiner	Art Unit	
	Andrew Nguyen	4124	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) *8-10* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7 and 11-19* is/are rejected.

7)☒ Claim(s) *3* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

   I. Claims 1-7 and 11-19, drawn to a system, classified in class 60, subclass 796.

   II. Claims 8-10, drawn to a method of operating a gas turbine engine, classified in class 60, subclass 204.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions in Group 1 and Group 2 are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another and materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the process as claimed can be practiced with another materially different apparatus comprising an array of housings that do not include bellows (as specified in claim 1), a heat shield that does not have an axial modulus of elasticity that is less than fifty percent of the modulus of the sector (as specified in claim 7), a heat shield constructed of hollow units (as specified in claim 11), or deformable connectors (as specified in claim 18). Specifically, the process can be practiced with an array of housings that are bolted together, which may not reduce the modulus of elasticity and may not be deformable, or with housings that are constructed from solid metal units, which would not be hollow.

3. Restriction for examination purposes as indicated is proper because all these inventions listed in this action are independent or distinct for the reasons given above and there would be a serious search and examination burden if restriction were not required because one or more of the following reasons apply:

(a) the inventions have acquired a separate status in the art in view of their different classification;

(b) the inventions have acquired a separate status in the art due to their recognized divergent subject matter;

(c) the inventions require a different field of search (for example, searching different classes/subclasses or electronic resources, or employing different search queries);

(d) the prior art applicable to one invention would not likely be applicable to another invention;

(e) the inventions are likely to raise different non-prior art issues under 35 U.S.C. 101 and/or 35 U.S.C. 112, first paragraph.

Applicant is advised that the reply to this requirement to be complete must include (i) an election of a invention to be examined even though the requirement may be traversed (37 CFR 1.143) **and (ii) identification of the claims encompassing the elected invention**.

The election of an invention may be made with or without traverse. To reserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election

shall be treated as an election without traverse. Traversal must be presented at the time of election in order to be considered timely. Failure to timely traverse the requirement will result in the loss of right to petition under 37 CFR 1.144. If claims are added after the election, applicant must indicate which of these claims are readable on the elected invention.

If claims are added after the election, applicant must indicate which of these claims are readable upon the elected invention.

Should applicant traverse on the ground that the inventions are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the inventions to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

During a telephone message to the examiner from Scott Andes on 10/31, a provisional election was made without traverse to prosecute the invention of Group 1, claims 1-7 and 11-19. Affirmation of this election must be made by applicant in replying to this Office action. Claims 8-10 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Specification

4. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction

of the following is required: In claim 6, "spacers … which support the annular flange", are claimed but not disclosed in the specification.

Claim Objections

5. Claim 3 is objected to because of the following informalities: The object, "the bracket section", lacks antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase, "except possibly at the base edges", is ambiguous because it is unclear whether or not the edges of the heat shield are impervious to gas.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claim 1-7, 11-12, and 14-19 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 5,988,975 to Pizzi (Pizzi).

In reference to claim 1:

Pizzi teaches:

A system, comprising:

a) a gas turbine engine, which includes at least one annular flange extending from a turbine casing (forward hook extending from support structure 36, Fig 4)*;*

b) a continuous annular heat shield (12)*, which encapsulates the annular flange, and includes bellows or diaphragms* (25) *which reduce the axial modulus of elasticity of the heat shield.*

In reference to claim 2:

Pizzi teaches:

System according to claim 1 (see rejection of claim 1 above)*, wherein the annular heat shield includes base edges* (radially inner surfaces of 20 and 22, Fig 4) *adjacent the turbine casing, and the annular heat shield is impervious to gas flow* (col 1 lines 21-26 and col 2 lines 4-8)*, except possibly at the base edges.*

In reference to claim 3:

Pizzi teaches:

System according to claim 1 (see rejection for claim 1 above)*, wherein the annular heat shield is constructed of several adjacent units* (Fig 1)*, each unit including*

c) a mounting section in thermal contact with a first sector of the-flange (20)*;*

b) a hollow section surrounding a second sector of the flange, and separated from the second sector by a blanket of air (Fig 4, annular channel 35)*; and*

d) a bulkhead lying in an axial plane, which connects the bracket section with the hollow section (25)*.*

In reference to claim 4:

Pizzi teaches:

System according to claim 3 (see rejection of claim 3 above)*, wherein the mounting sections are generally U-shaped in cross section, with legs of the U in thermal contact with the annular flange* (Fig 4; legs 18 and 16)*.*

In reference to claim 5:

Pizzi teaches:

System according to claim 3 (see rejection of claim 3 above)*, wherein the bulkheads flex during thermal expansion or contraction of the annular heat shield* (col 3 lines 48-59)*.*

In reference to claim 6:

Pizzi teaches:

System according to claim 1 (see rejection for claim 1 above)*, and further comprising spacers which extend between the heat shield and either the annular flange or the turbine casing* (16, 18, Fig 4)*, and which support the annular flange*

In reference to claim 7:

Pizzi teaches:

A system, comprising:

a) a gas turbine engine, which includes an annular flange extending from a turbine casing (forward hook extending from support structure 36, Fig 4)*, the flange/casing having an axial modulus of elasticity defined therein; and*

b) a heat shield (12)*, which*

i) encapsulates a sector of the flange (Fig 4)*, and*

ii) has an axial modulus of elasticity which is less than fifty percent of the axial modulus of elasticity of the sector (Fig 1; heat shield is segmented so that each segment deforms independently of the next. Modulus of elasticity of the entire heat shield would be lower because of this.)

In reference to claim 11:

Pizzi teaches:

A system, comprising:

a) a gas turbine engine, which includes at least one flange extending from a turbine shroud (forward hook of mounting assembly 36, Fig 4)*;*

b) an annular heat shield constructed of a sequence of hollow units, each unit surrounding a sector of the flange (12, Fig 1)*, and each unit comprising:*

i) a first housing (a 1st segment 12) *which surrounds a first sector of the flange,*

ii) a second housing (a 2nd segment 12) *which surrounds a second sector of the flange to define an air space* (annular channel 35) *between the second housing with the second sector*

In reference to claim 12:

Pizzi teaches:

System according to claim 11 (see rejection of claim 11 above)*, wherein (A) the first housing is generally U-shaped in cross-section* (12, Fig 4)*, and (B) legs of the U straddle the flange* (16, 18, Fig 4)*.*

In reference to claim 14:

Pizzi teaches:

System according to claim 11 (see rejection of claim 11 above)*, and further comprising*

c) a planar diaphragm, lying in an axial plane connecting an end of the first housing with an end of the second housing (25)*.*

In reference to claim 15:

Pizzi teaches:

System according to claim 11 (see rejection of claim 11 above)*, and further comprising:*

c) bellows means (25) *within the heat shield for reducing the axial modulus of elasticity of the heat shield* (since the heat shield is segmented with inter-segment “bellows”, axial modulus is lower than if the heat shield was a single piece)*.*

In reference to claim 16:

Pizzi teaches:

System according to claim 11 (see rejection of claim 11 above)*, and further comprising a collection of spacers* (16, 18, Fig 4) *positioned between the annular*

heat shield and either the annular shroud or the flange, which spacers support the annular heat shield.

In reference to claim 17:

Pizzi teaches:

System according to claim 16 (see rejection of claim 16 above)*, wherein an annular space exists between the annular heat shield and the flange* (annular chamber 35)*.*

In reference to claim 18:

Pizzi teaches:

A system, comprising:

a) a gas turbine engine containing a turbine shroud from which extends an annular body (fwd hook extending from support structure 36, Fig 4)*;*

b) an annular heat shield encapsulating the annular body (12)*, comprising:*

i) shell sections (12, Fig 1)*;*

ii) deformable connectors between adjacent shell sections (25)*; and*

iii) connectors for connecting the shell sections to the shroud or annular body (20)*, wherein each shell section captures a blanket of air adjacent the annular body* (35)*.*

In reference to claim 19:

Pizzi teaches:

System according to claim 18 (see rejection of claim 18 above)*, wherein the connectors are U-shaped, and of smaller cross-section than the shell sections*

(Fig 1, connector – 25, shell – 12)

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,988,975 to Pizzi (Pizzi) in view of US Patent 6,435,820 to Overberg (Overberg).

Pizzi teaches:

System according to claim 11 (see rejection of claim 11 above)*,*

Pizzi fails to teach:

and further comprising bolts which extend through the first housings and through the flange, and which clamp the first housings into thermal contact with the flange

Overberg teaches a gas turbine shroud that is bolted (144 and 164) into a shroud support case (116) in order to attach the shrouds to the support case. In addition, it is well known in the art to use “anti-rotation” pins that extend through the casing and heat shields to keep the heat shields from rotating circumferentially. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the bolts of

Overberg or the anti-rotation pins in the heat shield of Pizzi in order to attach the heat shields to the casing and to keep the heat shields from rotating circumferentially.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patent 4,472,108 to Pask and US Patent 4,875,828 to Willkop et al. are generally representative of gas turbine heat shields that encapsulate a casing flange. US Patent 6,726,446 to Arilla et al. is a gas turbine shroud that uses an anti-rotation pin. US Patent 5,127,795 to Plemmons et al. also teaches a gas turbine casing with a flange that is insulated from heat.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Nguyen whose telephone number is 571-270-5063. The examiner can normally be reached on Monday through Friday 8:30 am - 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Bomberg can be reached on 571-272-4922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AN

/Mark A. Robinson/

Supervisory Patent Examiner, Art Unit 4122